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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 11 MAY 2004

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Applicant's or agent's file reference -----		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/GB 03/00072	International filing date (day/month/year) 10.01.2003	Priority date (day/month/year) 10.01.2002
International Patent Classification (IPC) or both national classification and IPC C25C3/00		
Applicant COVENTRY UNIVERSITY et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 1 sheets.

3. This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 11.08.2003	Date of completion of this report 07.05.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Hammerstein, G Telephone No. +49 89 2399-8175 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/GB 03/00072**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-16 as originally filed

Claims, Numbers

1-5 filed with telefax on 12.03.2004

Drawings, Sheets

1/6-6/6 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☒ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

see separate sheet

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 4

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for the said claims Nos. 4

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the Standard.

☐ the computer readable form has not been furnished or does not comply with the Standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-3
Inventive step (IS)	Yes: Claims	
	No: Claims	1-3
Industrial applicability (IA)	Yes: Claims	1-3
	No: Claims	

2. Citations and explanations

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Re Item I

Basis of the report

The amendments filed with the International Bureau under Article 19(1) introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 19(2) PCT. In particular, no basis could be found at the passages indicated by the applicant for the passages added to claim 1 and new claims 3 and 4 in their entirety.

Thus, the following comments in section V are based on claims 1-4 as originally filed.

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Clarity, Article 6 PCT

Claims 1 and 3 lack clarity in that the wording used to define their subject-matter is unclear. In particular, the following features are vague and ambiguous:

- "of known kind" in claim 1,
- "whose values are approximated through wave reflection analysis on an infinite wall".

Unclear features cannot distinguish the claimed subject-matter over the prior art. Consequently, for the purposes of section V, these features will not be taken into consideration for the discussion of novelty and inventive step.

Sufficiency of Disclosure, Article 5 PCT

Further to disclosing the application of an external magnetic field on a system for liquid metal electrolysis, the present application is concerned with calculations based on theoretical models. There is no clear indication how these calculations

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are to be applied to the process parameters required for the control of a system for liquid metal electrolysis. There is also no example that could support a skilled person in such a process.

Thus, the present application does not disclose the alleged invention in a manner sufficiently clear and complete to be carried out by a person skilled in the art.

Novelty and Inventive Step, Article 33 (1) PCT

The features that are clearly and unambiguously defined by the present application and its claims are a system for liquid metal electrolysis having an external, time-varying and/or alternating magnetic field, which preferably is a vertical field. These features are known from

- US-A-4090930, which in column 2, lines 40-63 and claims 1-8 discloses an external vertical magnetic field which is applied to a liquid metal electrolyte system for compensation;
- GB-A-2041409 (claims 1,2) and US-A-4976841 (claims 1,15,20), which suggests to arrange the cells of a liquid metal electrolyte system such that the vertical component of a magnetic field is compensated;
- WO-A-0044963, which in claims 1-7 teaches to apply a magnetic field to a liquid metal electrolyte system by arranging, among other features, external magnetic blocks.

Claims 1-3 are therefore neither new nor inventive in view of any of the cited documents.